

**NEVADA DIVISION OF ENVIRONMENTAL PROTECTION**  
**FACT SHEET**  
(pursuant to NAC 445A.236)

**Permittee Name:** Las Vegas Valley Water District  
1001 S. Valley View Blvd.  
Las Vegas, NV 89153

**Permit Number:** NEV2003507

**Location:** Las Vegas Springs Preserve Desert Living Center  
391 S. Valley View Blvd.  
Las Vegas, Clark County NV 89153  
Latitude: 36° 10' 04"N, Longitude: 115° 11' 24"W  
Township 20S, Range 61E, Section 31

**General:** The Permittee presently operates a portion of this site at the Las Vegas Springs Preserve as a groundwater production, storage and distribution facility. In May 2005, public facilities will be opened which will include a state museum, cultural center, riparian wetlands, demonstration gardens and the Desert Living Center (DLC). One function of the DLC is to educate the public in sustainable living activities within the desert environment, including water conservation. The DLC expects up to 600,000 visitors per year.

The Permittee has submitted a discharge permit application to the Division, which proposes to treat domestic (sanitary) wastewater on-site and use the treated effluent for the purposes of landscaping irrigation and the flushing of water closets (i.e., toilets and urinals) in the facility's restrooms. The regulations for the reuse of treated effluent for irrigation purposes are contained in NAC 445A.275 through NAC 445A.280. These regulations do not address effluent reuse in plumbing fixtures, and this issue is left to the authority of the Clark County Health District. In Nevada, the state and local health departments (districts) are responsible for regulating the plumbing code for human health and sanitation purposes. Therefore, under the terms of this discharge permit, the Division can only authorize the use of treated effluent for landscaping irrigation purposes.

Wastewater will be generated in restrooms located in the DLC and sinks located in the garden support facilities. The average flow of domestic (sanitary) wastewater is designed for 8,400 gpd. Wastewater from the DLC will be pumped via lift station for primary treatment in a 15,000-gallon double-walled fiberglass-settling tank, which will be equipped with a biotube effluent filter for enhanced removal of suspended solids. Wastewater from the garden support facilities will be separately settled in a 4,000-gallon double-walled fiberglass-settling tank. The primary effluent from each settling tank will then be combined in a 4,000-gallon equalization tank, which functions as a dosing tank for the constructed wetland cells. The wetland consists of two vegetated treatment cells, each measuring 2,500 ft<sup>2</sup> in area. The wetland treatment cells allow for flow re-circulation and will be lined with either a 45-mil thick HPDE or PPE synthetic liner. The anticipated operating depth in each wetland cell is shallow, e.g., ½ ft. of water. In addition to BOD<sub>5</sub> and TSS removal, the wetland cells denitrify the effluent to below 10 mg/L of total nitrogen as nitrogen. The wetland cells effluent is then further treated and filtered in a 1,680 ft<sup>2</sup> re-circulating sand filter. Filtration of particles is specified down to 100 microns. Disinfection is performed in a ultra-violet (UV) light unit. The tertiary treated, UV-disinfected effluent is discharged to a 2,000-gallon concrete storage

tank for on-demand irrigation and/or water closet flushing needs. The Division's proposed discharge permit allows the treated effluent to be reused outdoors for landscape irrigation (i.e., trees, bushes, etc.). The application specifies that the effluent will be delivered sub-surface via drip delivery, which is an efficient means of delivering water to the plant root zone.

**Flow:** The wastewater treatment facility is designed for 8,400 gpd. The Division's proposed discharge permit allows the Permittee to supply all of the treated effluent for irrigation purposes, i.e., 8,400 gpd. The Permittee is required to prepare and submit an Effluent Management Plan to ensure that sufficient landscape irrigation is provided to manage this effluent flow. The application indicates that irrigation will occur year-round.

**Receiving Water Characteristics:** This discharge permit allows the reuse of tertiary-treated, UV-disinfected effluent for landscape irrigation via sub-surface drip delivery. The Las Vegas Springs Preserve is underlain by an unconfined shallow aquifer and a confined principal aquifer. On-site telemetry data indicate that depth to groundwater in the shallow aquifer is 17 ft. bgs. Flow direction is from west to east towards the Las Vegas Wash. The on-site production wells are screened from 500 to 925 ft. in the principal aquifer and provide municipal supply for customers in the Las Vegas Valley. The effluent is denitrified and disinfected. No impact to existing groundwater quality is anticipated from irrigation reuse. The principal aquifer is potable. However, the shallow aquifer is presently considered non-potable due to parameters such as high TDS.

**Proposed Effluent Limitations and Special Conditions:**

**Table 1: Plant Discharge Limitations**

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	30-Day Average	Daily Maximum	Measurement Frequency	Sample Type
Flow, gpd	8,400		Continuous	Flow Meter
BOD <sub>5</sub> , mg/L (Influent)	Monitor & Report		Monthly	Discrete
BOD <sub>5</sub> , mg/L (Effluent)	30	45	Monthly	Discrete
TSS, mg/L (Influent)	Monitor & Report		Monthly	Discrete
TSS, mg/L (Effluent)	30	45	Monthly	Discrete
Total Nitrogen as N, mg/L (Effluent)	10.0		Monthly	Discrete
Fecal Coliform, cfu or mpn/100 ml (Effluent)	200/100 ml (geometric mean)	400/100 ml	Monthly	Discrete
pH, Std. Units (Effluent)	Between 6.0 – 9.0		Monthly	Discrete

- *BOD<sub>5</sub> & TSS*: Irrigation reuse requirements in NAC 445A.275 require treatment to a secondary (i.e., biological oxidation) or higher level of treatment. The constructed wetlands and recirculating sand filter are designed to provide tertiary treatment (i.e., biological oxidation and nutrient removal).
- *Total Nitrogen*: The design specifications indicate that the treatment process is capable of year-round denitrification to below 10 mg/L of total nitrogen as nitrogen. Nitrification and denitrification are performed in both the wetlands and sand filter treatment processes.
- *Fecal Coliform*: The Division's applicable fecal coliform standards for drip irrigation systems are specified in NAC 445A.278 and are proposed as the applicable discharge limits in this permit.
- *pH*: The proposed discharge limits for pH are applicable for groundwater dischargers.
- *Operator Requirements*: According to NAC 445A.289, a Certified Grade III Operator is required for supervision of this wastewater treatment plant, since tertiary treatment and disinfection are provided.

**Schedule of Compliance:** The Permittee shall submit the following items to the Division for review and approval. All compliance deliverables shall be addressed to the attention of:

Mr. Nadir Sous, Supervisor  
Nevada Division of Environmental Protection  
Bureau of Water Pollution Control  
1771 E. Flamingo Rd.  
Suite 121-A  
Las Vegas, NV 89119

- Within thirty (30) days of the permit issuance date, the Permittee shall submit notification to the Division of the irrigation cross-connection control and wellhead protection procedures documentation required by Part I.A.18 of the permit conditions.
- Within ninety (90) days of the permit issuance date, the Permittee shall submit a copy of an Operations & Maintenance (O&M) Manual for the wastewater treatment facility, prepared in accordance with the Division's WTS-2 guidance: *Minimum Information Required for an Operations and Maintenance Manual*. This document shall be wet stamped and signed by a Nevada Professional Engineer (P.E.).
- Within ninety (90) days of the permit issuance date, the Permittee shall submit a copy of an Effluent Management Plan for irrigation reuse, prepared in accordance with the Division's WTS-1B guidance: *General Criteria for Preparing an Effluent Management Plan*. This document shall be wet stamped and signed by a Nevada Professional Engineer (P.E.).

**Procedures for Public Comment:** The Notice of the Division's intent to issue the applicant a discharge permit authorizing the on-site treatment of domestic wastewater and subsequent reuse via irrigation, subject to the conditions contained within the permit is being sent to the **Las Vegas**

**Review-Journal** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **September 9, 2003 by 5:00 P.M.** A copy of the public notice and fact sheet can also be downloaded from the Division's website at the following address: <http://ndep.nv.gov/admin/public.htm>

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

**Proposed Determination:** The Division has made the tentative determination to issue the proposed discharge/reuse permit for a period of five (5) years. The approval to allow water closets to be flushed with treated effluent is not granted by the Division. The local health department, i.e., Clark County Health District, provides approval for the use and application of the plumbing code.

Prepared by: Mark A. Kaminski, P.E.  
Staff Engineer III  
Bureau of Water Pollution Control

Date: August 5, 2003

Saved to: LasVegasSpringsPreserve\_factsheet